Total No. of	f Questions	:	9]
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SEAT No.:	

P1697

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[5460]-514

T.E. (Mechanical Engg.)

METROLOGY AND QUALITY CONTROL (2015 Pattern) [Max. Marks: 70 *Time* : 2½ *Hours*] Instructions to the candidates: Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8 & Q9. 2) Neat diagram must be drawn wherever necessary. Assume suitable data if necessary. 3) Use of calculator is allowed. 4) 5) Figure to right indicate full marks. a) Differentiate between Precision & Accuracy with suitable examples.[5] Q1)b) Determine the tolerance on hole and shaft for a precision running fit designated by 40H7g6. 40 mm lies in the diameter step of 30-50 mm. i = 0.45 (D) $\frac{1}{3}$ + 0.001 D microns. Fundamental deviation of g shaft $=-2.5D^{0.34}$ State the actual maximum and minimum size of both hole and shaft. IT7 = 16i, IT6 = 10i. Explain any one method of assessing the surface finish. O2)[5] b) Explain tool makers microscope & their application. Explain laser interferometer & its application. *Q3*) (a) [5] Write short note on machine vision system. [5] OR State & explain Taylor's principle of gauge design with example. *O4*) [5] b) Explain method of measuring effective diameter using two wires with neat sketch. [5]

P.T.O.

a) Explain Jurans triology approach with diagram. Q5)

- [8]
- b) State seven new quality tools. Explain any three in detail.

[8]

OR

- What is cost of quality? Explain Cost of failure, Cost of appraisal & *Q6*) Cost of prevention. [8]
 - What is initial planning for quality? Explain in details.

[8]

What are advantages of sampling inspection over 100% inspection? Q7)Explain the difference between Single sampling & Double sampling plan.

b) Following is the record for successive lots of part being produced by plastic molding press. As each lot is come off the line a random sample of 150 pieces were inspected (results are expressed to the nearest 0.1%). Calculate \overline{p} , Control limits & plot control chart and comment. [8]

Lot no. Sample size No. of defectives 1 150 4 2 150 8 3 150 2 4 150 4 5 150 4 6 150 6 7 150 10 8 150 4 9 150 6 10 150 8 OR			
2 150 8 3 150 2 4 150 4 5 150 4 6 150 6 7 150 10 8 150 4 9 150 6 10 150 8	Lot no.	Sample size	No. of defectives
3 150 2 4 150 4 5 150 4 6 150 6 7 150 10 8 150 4 9 150 6 10 150 8	1	150	4
4 150 4 5 150 4 6 150 6 7 150 10 8 150 4 9 150 6 10 150 8	2	150	8
5 150 4 6 150 6 7 150 10 8 150 4 9 150 6 10 150 8	3	150	2
6 150 6 7 150 10 8 150 4 9 150 6 10 150 8	4	150	4
7 150 10 8 150 4 9 150 6 10 150 8	5	150	4
8 150 4 9 150 6 10 150 8	6	150	6
9 150 6 10 150 8	7	150	10
10 150 8	8	150	4
	9	150	6
OR OR	10	150	8
2			

